

Tuik Ruch Lew Annual Report 2021

June 2022

Letter from the President of the Board of Directors

December 2021

2021...The Year of Strategizing for Sustainability

The year began with the threat of COVID 19 infection hanging heavy on the community of Santiago Atitlan. The wave of DELTA variant had taken a great toll on the population and people were not eager to open their homes to the outreach team from Tui'k Ruch' Lew. **Our rate of stove installations was 99. There were 105 stove restorations (new combustion chambers installed). All home visits totaled 1,049.**

The supply chain for our Utz Ja water filters was totally disrupted by COVID-19. For this reason, we had only **11 filters** installed this year. Only **4** of our filters were replaced due to the economic crisis brought on by COVID-19 in our Tz'utujil community.

Meanwhile, Dr. Jessica Kind, managing director, devoted her time to exploring the voluntary carbon market with an eye to selling TRL's 975 Verified Carbon Units (VCU) and searching for grant opportunities. She was successful in obtaining two grants for TRL's stove project: The Project Solution for \$3,200 (April 2021 – August 2021) and Meal a Day for \$25,900 (to be sent in 2022). Our faithful individual donors supported us in the amount of \$28,017.00 Community contributions totaled \$5227,00.

Jessica also made numerous, successful presentations to groups appealing for funding for TRL's Biogas Digester Demonstration project. We received generous funding from Petaluma, CA Rotary Club, as well as Ft Collins, Colorado Club, together bringing in \$7000, raising our funding nearly to the goal of \$10,000. Unfortunately, the David la Motte school was unable to achieve certification for Primary Grades for the year 2022, so our project will be put on hold until such time as we are assured that the school will be receiving students needed to provide the amount of fecal matter necessary for our digester.

The Voluntary Carbon market, where Tui'k Ruch' Lew is registered with VERRA to sell our VCUs, appears to be a challenge. The price of VCUs on the market is low and even with VERRA's Sustainable Development Verified Impact Standard (SDVISTA) labels verifying our positive impact in eight sustainable development areas, there is little or no interest in our "boutique" VCUs when the market is flooded with inexpensive VCUs generated mainly by agroforestry projects and sustainable energy such as wind and solar farms.

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Our main focus for the year has been the search for a strategy for sustainability for TRL. We realize the need for improvements in:

- Finding a communications specialist dedicated to promoting TRL on social media, as well as more frequent communications with our followers in the form of newsletters
- Finding a dedicated grant writer and researcher
- Involving men in the beneficiary families to help with stove installations to maximize their involvement, knowledge of how the stove functions and commitment to its correct use and maintenance

As the year ended, we moved towards restructuring the organization into a more efficient team and the formation of an Advisory Board in the US, composed of individuals who have expressed an interest and support for the work of Tui'k Ruch' Lew, who can possibly guide us in achieving the sustainability of the association.

Looking forward with optimism to the new year,

Candis Krummel, President of the Board of Directors

Improved Cookstove Program

Santiago Atitlán, a Tz'utujil Maya community of 55,601 inhabitants ([INE, 2020](#)), is located on the shore of Lake Atitlán. It suffers an overall poverty rate of 78.9% and an extreme poverty rate of 26.3% ([Entre mundos, 2020](#)). Due to this economic situation, most families use open fires in their homes--typically the traditional, three-stone hearth--to prepare their food. Open fires in the houses directly threaten the health of the families due to household air pollution from the toxic smoke. Moreover, the families spend about 22%¹ of their monthly income buying firewood for cooking or in the case of collecting firewood, spending a lot of time on this activity. In 2020, 3 hectares of forest were cut for firewood in just the Municipality of Santiago Atitlán.

The energy-efficient ONIL cookstove is a long-term and sustainable solution. Why?

- **Environmental Impact:** Deforestation is reduced by up to 70% with the ONIL cookstove. Burning less wood reduces greenhouse gas emissions.
- **Social Impact:** The contained fire reduces household air pollution (HAP) by 99% and thus reduces smoke-related health problems such as respiratory illnesses, and itchy eyes. Moreover, the contained fires avoid burns on women and children. The savings

¹ The [average income](#) of a family in Santiago Atitlan is about 1,140Q. On average a family spends about 250Q on firewood.

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of the firewood saves time that women can spend on income producing activities, such as bead work, weaving and embroidery or on education.

- **Economic impact:** The money saved on firewood contributes to an improved family economy.

Monitoring Plan

The monitoring plan for our improved cookstove program consists of home visits and household surveys. All survey data are monitored with KoBo Toolbox - a free, open-source tool for mobile data collection. We named our customized system "Ix k'ola pe jay" which means "Is anyone home?" in Tz'utujil.

OUR PROCESS

Survey 1: Customer Information and Site Visit

We collect information about the client, the site where the stove will be located, the origin and type of firewood used, family health status, economic status and system of sanitation. Information is provided to the client about the projects and environmental objectives of TRL, requirements for participating in the stove project and purchasing the stove, plus information about the immediate dangers and long-term respiratory health risks of the open fire, especially in the time of COVID19. Clients are empowered by the use of their stove to protect the forests for future generations.

During 2021 our team collected information about 108 potential installation sites.

Survey 2: Installation

The installation takes place within one week after the site visit. TRL's installer enlists the help of the family members, while the Technological Adaptation Specialist gives "hands-on" instruction to the woman who will be using the stove -- preparing the stove-top surface, lighting it and cooking a few tortillas. The stove is given its unique number and a photographic record is made of the owner and her home from the outside, to enable future team members to easily identify the owner and her home in the following visits.

In 2021 TRL installed 99 new stoves -- goodbye to household air pollution!

Survey 3: Follow-up within one week

This most important visit is conducted in the first week after the stove is installed. Our experience has shown that it is in these first days of usage, that owners might become frustrated, find some aspect difficult and actually destroy the stove! Being used to open fires, they often want to enlarge the opening of the combustion chamber, so that they can continue to burn big chunks of wood in their stove...exactly the behavior we are trying to

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change! We visit to determine the user's success and satisfaction with the benefits of the stove, providing useful tips on usage and information on maintenance. During this visit, the scene is usually woman to woman and a level of confidence has been achieved.

Survey 4: Follow-up after 3 months

This is conducted 3 months after the installation of the stove, to ensure proper functioning, benefits and demonstrate basic stove maintenance -- including proper placement of the sand inside the stove, and cleaning the underside of the metal stove top. During this visit, families are encouraged to prepare for purchasing replacement parts by beginning to save small amounts of money every month -- they are invited to participate in TRL's Savings Program.

Survey 5: Follow-up after 1 year.

One year after the installation of the stove a visit is scheduled to verify the general condition of the stove, evaluate the user's satisfaction about the benefits provided and to check if any maintenance is needed. A detailed survey of the user's health situation compares the health conditions before with those a year after the installation of the stove. Economic analysis of money spent or time saved gathering firewood during the year, demonstrates to the users the positive economic impact of their stove. The families are also reminded of the number of trees they saved in the forests.

Survey 6: Annual follow-ups

With proper use and maintenance, the ONIL stoves can have a twenty year life. We visit our clients annually after installation, evaluating the stove's general condition, user satisfaction and need for maintenance or repair. Issues most commonly encountered are the need for a replacement combustion chamber or a new chimney,

Stove Restorations

When our team is out in the community, they are often called in to see an old stove that was installed some years ago under the auspices of another stove program. An example of this are the stoves distributed by the former First Lady in 2005, after the disaster of Hurricane Stan left many people in Santiago Atitlan homeless. A large number of TRL's "legacy stoves" were also installed by the Cojolya Association of Maya Women Weavers as far back as 2004. Recently our team re-visited stove # 10, a stove which we have kept repaired and fully functioning.

Sometimes, a woman has gathered parts of an old ONIL stove and put them together to build her own improved stove. She will call on TRL to finish the job of restoration, which we gladly complete.

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For TRL, a restored stove is as efficient as a new stove. They become enrolled in our VCU offset program -- added to our monitoring program and our VCU registry with VERRA. They help TRL to eventually become self-sustaining through the sale of these carbon units in the voluntary carbon market.

Our team restored 105 stoves in 2021.

Utz Ja Water Filters outfitted with Berkefeld Filters

Among Santiago Atitlán residents, 89% live in urban areas and 11% live in rural regions. Most residents get their drinking water from household or public taps (90%), with the remainder receiving their water directly from the lake (7%) or other sources such as streams and wells (3%)². In the 1990s, Santiago Atitlán, in collaboration with international aid organizations, developed a public water system as a response to the cholera epidemic near the end of the Civil War.

1991 - UNICEF donated a 125-horsepower water pump that served 3,500 household taps with water from Lake Atitlan.

1993 - Guatemala ranked third in the northern hemisphere in reported cases of cholera³. The municipality was advised to start a chlorination treatment to the town's water supply as an additional public health measure.

2005 - As a response to the natural disaster of Hurricane Stan, Santiago Atitlán was advised to increase the levels of chlorination in its water supply.

2010 - Six pumps transport water from Lake Atitlán and distribute it to household taps in Santiago Atitlán. The municipal water system is treated with chlorine dioxide as lake water is contaminated by fecal bacteria and agrochemicals, among other pollutants. The municipality manages the chlorine treatment, which is monitored by the local office of the Ministry of Health (Centro de Salud).

Sometimes the levels of chlorine are so high that people refuse to drink the water. The fragile and outdated water distribution system includes a system of porous distribution pipes. Thus, impurities can easily enter the piping system. Brownish water is especially a problem during the rainy season.

² Instituto Nacional de Estadística (GU). Censo de Santiago Atitlán. Guatemala: INE; 2006.

³ Koo D, Aragon A, Moscoso V, Gudiel M, Bietti L, Carrillo N, et al. Epidemic cholera in Guatemala, 1993: transmission of a newly introduced epidemic strain by street vendors. *Epidemiol Infect.* 1996;116(2):121-6.

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Therefore, families who have the economic resources buy 5 gallon carboys of bottled water, while families with scarce financial resources do not have that choice. Buying bottled water at GTQ15 a gallon, means that this bottled water is only used for drinking. Water for cooking and washing vegetables is generally boiled, using additional energy for boiling it. Poorer families buy small plastic bags of water for drinking, increasing the contamination of the area with single use plastic bags.

TRL's water filter program is designed for families with economic struggles. Our British Berkefeld Super Sterasyl ceramic filter is silver impregnated to inhibit bacterial growth and can remove pathogenic bacteria (such as E-coli, Salmonella, Legionella, Cholera, Salmonella Typhi, Shigella, Klebsiella) and cysts. Moreover the granulated activated carbon reduces chemical and organic compounds, which enter the lake water from fertilizers, pesticides and sewage effluents. The filter reduces chlorine levels, turbidity, sediments, and particulates. It is cleanable and self-sterilizing for the life of the filter.

Costing only GTQ 300, this excellent water filter is an affordable alternative to provide safe and clean water to the families. Our team installs and teaches the family how to clean and maintain the system. With an average family size of 6, the ceramic filter needs to be changed every year --TRL notifies the owner when it is time to buy a new filter. The acquisition costs are about GTQ 25 per month in the first year. With GTQ 150 for a new ceramic filter, the maintenance costs amount to GTQ 12,50 per month. Compare this with the price of a 5 gallon carboy of bottled water at GTQ 15 each!

In 2021 TRL installed 11 water filters and replaced 4 old filters.

Microsaving Program

TRL is aware of the economic conditions of the families with whom we work. Recognising that poverty is associated with inadequate nutrition, food insecurity, inadequate childcare, lack of access to health care, unsafe neighborhoods and under-resourced schools, TRL aims to provide financial assistance to these families through the Micro-Saving Program.

The aim is to ensure that families can afford the replacement parts for the ONIL stoves and water filters. It is also to educate how continual savings - as small as 1 GTQ - can accumulate to cover the cost of parts which will be needed in the future. Women are especially grateful for the opportunity to have a secure place for small savings. In 2021,, Santiago Atitlan was still in an economic emergency created by COVID, so the ability to save money was limited.

In 2021, 7 more women joined the microsaving program.

Biogas Digester Program

2021 was mainly a year of Program Development for the Demonstration Project of a Biogas Digester at the David La Motte School. We began the year with a visit to school and the construction site where the new classrooms would be built. In May. We had various

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meetings with our international collaborators in Cuba and Honduras., from whom we received detailed plans for the digester and a list of required materials. Plans were developed for the future community assessment. Jessica was actively involved in fundraising for the project and we received some \$9,400 for the project. All plans were halted when we received news that the school would not be opening in 2022, because the Ministry of Education had not approved the school for primary grades..The funds received were put into a certificate of deposit where they would be generating interest for the project until such time as we could renew activities.

COVID Response

The year 2021 was still very challenging for Tu'ik Ruch' Lew. At times, governmental restrictions have limited or completely halted activities that require direct visits to our clients' homes. The autumnal wave of the Delta variant of COVID-19 was especially intense in Santiago Atitlan. We had to close for periods of time when the Public Health department indicated a "Condition Red." That meant no stove installations, no stove maintenance, and no water filter distribution. Thus, it prevented us from achieving our 2021 targets relating to stoves and water filters.

2021 in a Nutshell

- January
 - Visit to David LaMotte School to determine location for biogas digester
 - TRL developed the biodigester program
 - Ready to go project
 - Funding: 80%
- February
 - TRL finished the verification process with Verra and AENOR
 - TRL created a donor base
 - Regular outreach communication (newsletter, social media)
 - Launched a new website
- March 2021
 - TRL issued 975 carbon credits (VCUs) that are labeled with the SD VISTA (standard for sustainable development)
- January - December 2021
 - TRL presented the cookstove project on the voluntary carbon market inter alia: myClimate, ecoAct, atmosfair, Cool Effect, Pachama, ACT, Climate Partners GmbH, Native Energy, Klik, Portland General Electric, Southpole Carbon, C-Quest, Climate Care, 3degrees, Atos.

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Recurring Themes:

Project volume is too small (most brokers are looking to buy at least 3000 VCUs) Selling price is too high: (the market offers \$6-10 per VCU, but the project cost to remove one tonne of CO₂ is \$53.)

- TRL did grant research and grant writing resulting in 9 grant applications in 2021 - 2 successful applications with the Project Solutions and Meal a Day (for 2022 funding)
- April - Project Solutions grant awarded for \$3,200
- August - Visit from Stove Team International - presentation by the TRL team to Stove Team International staff. They were impressed by TRL's level of successful adoption.
- September - New Promotional and Informational video produced and released
- December - Meal a Day grant awarded of \$25,900 for 160 stoves to be installed in 2022

Meet the Team

None of us is as smart as all of us put together. For TRL, co-creation is the center of development. Whether we speak of personal development, team development or project development, the TRL team believes in the process of co-creation. TRL places a strong emphasis on engaging all team members and community members to foster innovation and community involvement.

Cameron M. Krummel

Cameron came from the United States to live in Santiago Atitlán at the age of 5. He grew up as an *Atiteco* and was lovingly accepted by the community as a "native son." Having a profound understanding of the situation of the community and its needs, he founded the association Tu'ik Ruch' Lew/Helping the Earth, to protect the precious ecosystems and contribute to a better quality of life for the Tz'utujil people.. He is the financial administrator of the association.

Isabel Quinilla Perez

Isa is a Tz'utujil woman with many culinary skills -- she loves cooking and knows the time women invest to prepare food and what it means to suffer from the problems caused by inhaling smoke from open fires. With her experience in teaching nutrition and cultural knowledge she became one of TRL's educators, an advocate for environmental conservation and technology adaptation. Isa is responsible for promoting and empowering women in the

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use of the Onil stove. With her open and friendly manner, she communicates the benefits of the stoves for the families and the environment.

Jose Cua Ajuchan

Jose is passionate about working for his Tz'utujil Maya community. Since his teenage years, Jose has been working in construction in many different places in Guatemala - building schools, homes, and WASH related infrastructures such as hand washing stations. This experience is pure gold as the installer of ONIL stoves for TRL. His generous spirit and his eagerness to help the community are present in his day to day work. During the pandemic he was envisioning production of the energy-efficient stove by local builders here in Santiago and created a mold for a replica of the open-source, ONIL stove.

Maria Sosof Sosof

Maria is a proactive woman who loves to volunteer to contribute to the empowerment of young people and women. Maria cares about the environmentally friendly development of the Maya Tz'utujil community. She wants to make a difference by waking up the people about social injustice and environmental destruction. With her honest and outspoken nature, she is our second environmental expert and technology adoption specialist. Maria is responsible for the microsavings program within TRL.

Dr. Jessica Kind

Jessica is the director of TRL. With her international background in mechanical engineering, environmental and climate science she is the perfect complement for our local team. Many years of implementing water and sanitation solutions in developing countries have made her aware of the cultural and political challenges accompanied with the implementation of new WASH technologies. For her, the WASH sector is one of the main leverages in combating global warming (2% of the anthropogenic GHG emissions come from pit latrines) and for the sustainable development of communities most affected by climate impacts. We are happy to work together with her towards climate resilient development.

Financial Report

The year 2021 closed with a positive balance of **GTQ 9,945.06** plus **\$10,799.40**. TRL managed to raise **\$ 38,217.00** from individual supporters, Rotary Clubs, on-line fundraising including the grant from Project Solutions. Community support totalled **\$ 5227.00**.

Actions to Take for TRL Survival

- Obtain a volunteer for Communications and Marketing TRL to expand donor base
- Involve a volunteer grant researcher and writer
- Sell Carbon Credits

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- Expand Outreach to two teams
- Perfect TRL strategy for ensuring the correct use and care of the stove
- Hire a professional accountant
- Develop an implementation plan to cover IGGS
- Secure IT support/consultant who will develop program to eliminate the need for a dispatcher
- Analysis and development of a Strategic Plan, Annual Operating Plan and Institutional Needs